

CLAIMS

What is claimed is:

1. An isolated polynucleotide comprising a first nucleotide sequence encoding a potassium channel agonist polypeptide of at least 25 amino acids that has at least 95% identity based on the Clustal method of alignment when compared to a polypeptide selected from the group consisting of SEQ ID NOs:2, 4, 6, 8, 10, 12, 14, and 16, or a second nucleotide sequence comprising the complement of the first nucleotide sequence.
2. The isolated polynucleotide of Claim 1, wherein the isolated nucleotide sequence consists of a nucleic acid selected from the group consisting of SEQ ID NOs:1, 3, 5, 7, 9, 11, 13, and 15 that codes for the polypeptide selected from the group consisting of SEQ ID NOs:2, 4, 6, 8, 10, 12, 14, and 16.
3. The isolated polynucleotide of Claim 1 wherein the nucleotide sequence of the fragment encodes a mature protein.
4. The isolated polynucleotide of Claim 1 wherein the nucleotide sequences are DNA.
5. The isolated polynucleotide of Claim 1 wherein the nucleotide sequences are RNA.
6. A chimeric gene comprising the isolated polynucleotide of Claim 1 operably linked to suitable regulatory sequences.
7. An isolated host cell comprising the chimeric gene of Claim 6.
8. An isolated host cell comprising an isolated polynucleotide of Claim 1 or Claim 4.
9. The isolated host cell of Claim 6 wherein the isolated host is selected from the group consisting of yeast, bacteria, plant, and virus.
10. A virus comprising the isolated polynucleotide of Claim 1.
11. A polypeptide having at least 25 amino acids and being at least 95% identity based on the Clustal method of alignment when compared to a polypeptide selected from the group consisting of SEQ ID NOs:2, 4, 6, 8, 10, 12, 14, and 16.
12. A method of selecting an isolated polynucleotide that affects the level of expression of a polypeptide in a plant cell, the method comprising the steps of:
  - (a) constructing an isolated polynucleotide comprising at least one of 30 contiguous nucleotides derived from a nucleotide sequence selected from the group consisting of SEQ ID NOs:1, 3, 5, 7, 9, 11, 13, 15, and the complement of such nucleotide sequences;
  - (b) introducing the isolated polynucleotide into a plant cell;
  - (c) measuring the level of a polypeptide in the plant cell containing the polynucleotide; and

(d) comparing the level of polypeptide in the plant cell containing the isolated polynucleotide with the level of polypeptide in a plant cell that does not contain the isolated polynucleotide.

13. The method of Claim 12 wherein the isolated polynucleotide consists of a  
5 nucleotide sequence selected from the group consisting of SEQ ID NOs:1, 3, 5, 7, 9, 11, 13, and 15 that codes for the polypeptide selected from the group consisting of SEQ ID NOs:2, 4, 6, 8, 10, 12, 14, and 16.

14. A method of selecting an isolated polynucleotide that affects the level of expression of polypeptide in a host cell, the method comprising the steps of:

10 (a) constructing an isolated polynucleotide of Claim 1;  
(b) introducing the isolated polynucleotide into a host cell;  
(c) measuring the level of polypeptide in the host cell containing the polynucleotide; and

(d) comparing the level of polypeptide in the host cell containing the isolated  
15 polynucleotide with the level of polypeptide in a host cell that does not contain the polynucleotide.

15. A method of obtaining a nucleic acid fragment encoding the amino acid sequence encoding a potassium channel agonist polypeptide comprising the steps of:

(a) probing a cDNA or genomic library with an isolated polynucleotide  
20 comprising a nucleotide sequence of at least one of 30 contiguous nucleotides derived from a nucleotide sequence selected from the group consisting of SEQ ID NOs:1, 3, 5, 7, 9, 11, 13, 15, and the complement of such nucleotide sequences;

(b) identifying a DNA clone that hybridizes with the isolated polynucleotide; isolating the identified DNA clone; and

25 (c) sequencing the cDNA or genomic fragment that comprises the isolated DNA clone.

16. A recombinant baculovirus expression vector comprising a DNA sequence encoding all or a portion of a polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, SEQ  
30 ID NO:10, SEQ ID NO:12, SEQ ID NO:14, and SEQ ID NO:16.

17. An isolated polynucleotide comprising at least one of 30 nucleotides derived from a nucleotide sequence selected from the group consisting of SEQ ID NOs:1, 3, 5, 7, 9, 11, 13, 15, and the complement of such sequences.